

PTO 06-5206

Japanese Patent

Document No. 04-112169

***Title***

Yousetsu you Wire no osae bubun

Nippon Yousetsu Kougyou Kabushiki Gaisya

UNITED STATES PATENT AND TRADEMARK OFFICE

Washington, D.C.

Month Year

Translated by:

Country : Japan

Document No. : 04-112169

Document Type : Patent application

Language : Japanese

Inventor : Noburou Saeki, Yoshikazu  
Tanaka, Kenji Shiyama

Applicant : Nippon Steel Welding Co.,  
Ltd.

IPC :

Application Date : 08/29/1990

Publication Date : 04/14/1992

Foreign Language Title : Yousetsu you wire no  
osae bubun

English Title : The regulating material  
for welding wire

**(12) Japanese Unexamined Patent  
Application Publication (A)****H4-112169**

(51) Int. Cl. <sup>4</sup>	Identification codes	JPO file numbers	(43) Publication date H1(1992)-04/14
B 65 H 59/06	A	6893-3F	
B 23 K 9/12		7920-4E	Number of claims 1
B 65 H 49/08		6869-3F	Request for examination Not yet requested
			(Total of 5 pages)

(54) TITLE OF INVENTION: Regulating material for welding wire	(71) Applicant	Nippon Steel Welding Co., Ltd. Tokyo Prefecture, 3-5-4 Tukiji, Chuou-ward,
(21) Application number	1990-226887	
(22) Date of application	08/29/1990	
(72) Inventor	Noburou Saeki 3-5-4 Tukiji, Chuou-ward, Tokyo c/o Nippon Steel Welding Co., Ltd.	(72) Inventor Kenji Shiyama 4-2-1 Asae, Hikari-city, Yamaguchi c/o Nippon Steel Welding Co., Ltd. Hikari factory
		(74) Agent Patent attorney Masaki Sekikan
(72) Inventor	Yoshikazu Tanaka 4-2-1 Asae, Hikari-city, Yamaguchi c/o Nippon Steel Welding Co., Ltd. Hikari factory	

**SPECIFICATION****1. TITLE OF THE INVENTION**

Regulating material for welding wire

**2. SCOPE OF PATENT CLAIMS**

1. A regulating material embedded within a pale back which is placed at the top of the loop layer stack for welding wires. This regulating material for welding wire is completed with a controller which hangs over magnetic material and suctions the loop above the air hole of the loop layer stack.

[Field of industrial application]

This invention is related to the regulating material for welding wire which allows the looped welding wire to pick another wire from an embedded pale back, so that the wire ejects smoothly and quickly without getting tangled.

[Traditional method]

The pale back is utilized to contain a large volume of welding wires. However, the wires must eject from the top of the wire loop layer stack and continue its way through conduit tube to the welding torch guided by the transmitting equipment.

All wires contained within the pale back are under maximum resilience. For instance, one loop of wire is under 270°~360° of pressure. Due to that fact that the wire tends to spring toward the center of the shaft when freed it is most likely to bind and get tangled. Hence, traditionally

is was suggested to place a circular weight above the loop layer stack within the pale back to hold the wire down preventing wires from springing out.  
(Example: Working example 1989-4764)

[Action assignment of the invention]

However, the tangling of wires still occurred within the inner circle of the circular weight, namely the wire exit hole, when using a pale back in a single cylinder shape without an inner layer. A single cylinder shape pale back does not have an inner layer; therefore, the opening at the wire loop is rather large. Given that, when a 2~3 wires are picked at once, the wires tend to jump out of the air hole as mentioned above causing inconvenient tangling problem. This problem can be avoided when only one loop is picked per each time. The tangling within the pale back welding disables the welding process since the welding torch is not fed properly and/or poor welding could take place if it did not disrupt the entire process.

Contrary to the downfall of the traditional method, the regulating material picks up the wire as the wire exits from the pale back, promising a smooth and quick ejection without tangling<sup>1</sup>.

[Measure to solve the action assignment]

A regulating material embedded within a pale back is to place at the top of the loop layer stack for welding wires and is equipped with a controller that hangs over the magnetic material suctioning the loop and the above the air hole of the loop layer stack.

[Mechanism]

The regulating material of welding wire mentioned within this invention is completed with magnetic material that suction ferromagnetic wire loop. Even if the exiting wire irregularly tries to drag out the following few loops, the magnetic material sucks them back into place until their turn comes around. This is how only one wire at a time is picked up at the top of the loop layer stack with regularity. Should the following few loops happen to be drug out at once, the controller that hangs over the magnetic material would stop the wire loop chaos.

[Working example]

As per figure 1 is a longitudinal section of the regulating material of welding wire when in use. A pale back 1 is equipped with body part 2 and basil part 3 containing welding copper wires within the loop layer stack. 4 refers to this loop layer stack located at the top of which the regulating material 5 is placed. After being picked up, the wire W is pulled down into the wire feed port of the conduit tube which is found at the upper part of the

By contraries to (b), the outer circumference is named a magnetic material 5b3 while the inner circumference is called a main body 5a3 in the regulating material 53 of (c). The regulating material 54 shown in (d) has the magnetic material 5b in tape shape adhering to the inner circumference at the bottom of the main body 5a. The regulating material 55 of (e) has the main body 5a5 with the magnetic material at the bottom that is adhered within an interval radial pattern. The regulating material 56 of (f) has the ring-shaped magnetic material 5b6 placed at the upper part of the main body 5a6. The regulating material 57 of (g) includes the main body 5ab, which is at the same time the magnetic material.

Shown in diagram 3 (a) ~ (c) is the entire perspective view of the regulating material in other working examples. The regulating material 5 of (a) displays the entire perspective view of diagram 1 which the magnetic material 5b is attached to the bottom part of the main body 5a carrying the cylinder shaped controller 5c at the inner circumference. The regulating material 58 of (b) is a working example the cylinder shaped controller shown in (a) cut apart in a undulating pattern. The waveform incision cuts through the cylinder shaped controller 5c9 and reaches the main body 5a9 as well as the magnetic material 5b9 in the regulating material 59 of (c). Evidently, the main body and the magnetic material can be either separate or located within the same unit.

Patent H4-112169 (2)

pale back. The regulating material 5 shown in this working example consists of; the synthetic resin circular shaped main body 5a that regulates the wire loop at the upper end of the layer stack, the permanent magnetic material 5b set under the main body of 5a which magnetically pulls in wire loops, and the synthetic resin cylinder shaped controller 5c positioned at the inner side of the main body 5a that regulates the flexibility of wires to guide them up to the exit. In addition, it is proven by the working example S64 (1989)-4764 that the wires would not pop out from distance 8 between the outer diameter of the regulating material 5 and the inner diameter of the pale back. 6 is a string used in the [translator note: illegible] method, whereas 7 refer to an entrance hole where the string 6 arrives. As a matter of fact, additional available methods may be applied in a proper manner other than xxx (illegible) method in order to prevent the wires from leaping out.

Shown in diagram 2 (a) ~ (g) is the longitudinal section of the regulating material of another working example. Contrary to the regulating material of the diagram 1, the regulating material 51 of (a) within the aforementioned diagram consists of; the main body 5a which is located at the bottom part contacting the wire loop and the magnetic material 5b found at the upper part. In regards to the regulating material 52 of (b), the outer circumference is referred to as the main body 5a2, while the inner circumference is referred to a magnetic material 5b2.

There is no restriction in reference to the shape of the magnetic material or its location while within the same unit. In the working example mentioned above, the controller is embedded at the inner circumference of the main body with a given angle. However, it can be installed with a given curvature factor or it can hang over the same place as the main body. Likewise, no restriction applies to the shape, location or the material of the controller as well as how it is to be installed within the main body. Additionally, the material of the main body is not limited to the synthetic resin such as chloromethane used within the aforementioned working example. In short, the regulating material of welding wire of this invention is completed with magnetic material that pulls in the ferromagnetic wire loop preventing the exiting wire from dragging out the following few loops. In this case the following few loops are pulled out at once and the controller hanging over the magnetic material will stop the wire loop chaos. The shape, material or configuration is not specified so long as the function and effect remains the same. Therefore, various different examples may be used.

[Effect of the invention]

As explained above, only one wire is picked up at a time at the top of the loop layer stack with regularity. Even when the following few loops happened to be pulled out all at once<sup>2</sup>,

Regulation [*translators note: seal: illegible*]

the wire exits out of the pale back extremely smooth and quick without tangling. The regulating material is remarkably effective when picking up the welding wires stack into the single cylinder shape pale back. The welding procedure is not interrupted and the wires exit continuously. This invention offers a simple structure, yet, it is more practical than ever.

#### 4. A brief description of the drawings

Diagram 11 is the longitudinal section of the regulating material for welding wire which is in use.

Diagram 2, (a) ~ (g) refers to the partial cross section of the magnetic material in other working examples.

Diagram 3, (a) ~ (c) refers to the entire perspective view of the controller in other working examples.

1 ... pale back      4 ... loop layer stack

5. 51, 52, 53, 54, 55, 56, 57, 58, 59 ... regulating material

5a, 5a1, 5a2, 5a3, 5a4, 5a5, 5a6, 5a9, 5ab ... magnetic material,

5c, 5c1, 5c2 ... controller

W ... wires.

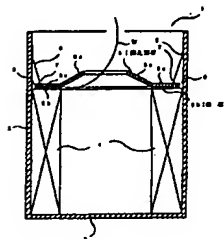


Diagram 1<sup>3</sup>

Amendment of proceeding (self-claimed)

01/16/1991

Administrator of Japan Patent Office: [translators note:  
illegible] Uematsu

1. Identification of the matter  
No. 226887 patent application in 1990
2. Name of invention  
Regulating material for welding wire
3. Name of the person requesting amendment  
Relationship with the matter: Patent Applicant  
Address: 3-5-4 Tukiji, Chuou-ward, Tokyo  
Name: Nippon Steel Welding Co., Ltd.  
Representative Kiyoshi Kobayashi
4. Name of proctor: Zip code 101  
Phone: 03 (3863) 0220  
Address: Daiichi-Higashi Building, 3-4-5  
Iwamoto-cho, Chiyoda-ward, Tokyo  
Name: (7017) Minoru Aoyagi, Patent attorney
5. Date of amendment directive: None
6. Additional number of claims added due to the amendment: None
7. Parts amended: Detail explanation  
under patent description, drawings along the brief  
explanation of the drawings

[translators note:

*Seal: Patent Office March 1, H17 Application]*

Patent H4-112169 (3)

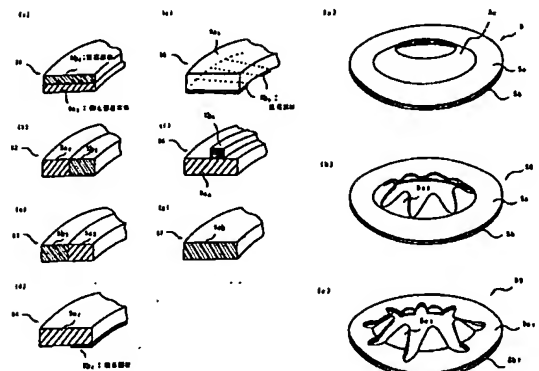
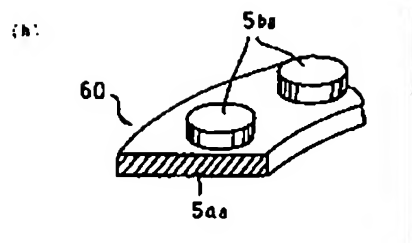


Diagram 2

**Diagram 3**

## 8. Content of the amendment

- (1) Patent description item 5-11 (page 4, line 40), the sentence "to the exit. In addition" should be amended to "the diameter of the wire exit hole of the regulating material body 5a either equals to the inner diameter of the loop layer stack 4 as shown above, or could be bigger, or could be smaller. In addition"
- (2) Patent description item 6-14 (page 5, line 15), "the magnetic material." should be amended to "the regulating material 60 in the same drawing (h) is the regulating material body 5 with several circular magnetic materials 5b either glued on top or embedded."
- (3) Patent description item 9-8, "g" should be amended to "h"
- (4) Patent description item 9-13, "59..." should be amended to "59, 60..."
- (5) Patent description item 9-14, "5ab..." should be amended to "5ab, 5az"
- (6) Patent description item 9-16, "5b, ..." should be amended to "5bz, 5bz"
- (7) The following drawing 2(h) should be added to the drawing 2<sup>4</sup>



Drawing 2

(8) Drawing 3 (c) should be amended as follows.<sup>5</sup>

